

What is claimed is:

1. A nuclide transmutation device comprising:

a structure body that is made of palladium or a palladium alloy, or a hydrogen absorbing metal other than palladium, or a hydrogen absorbing alloy other than a palladium alloy;

5 an absorption part and a desorption part that are disposed so as to surround said structure body on the sides and form a closed space that can be sealed by said structure body;

a high pressurization device that produces a relatively high pressure of deuterium at said absorption part on the side of the surface of said structure body;

10 a low pressurization device that produces a relatively low pressure of deuterium at said desorption part side on the other side of the surface of said structure body; and

a transmutation material binding device that binds the material that undergoes nuclide transmutation onto one surface of said structure body.

2. A nuclide transmutation device according to claim 1, wherein

said high pressurization device comprises a deuterium supply device for supplying a deuterium gas to said absorbing part; and

5 said low pressurization device comprises an exhaust device which evacuates said desorption part.

3. A nuclide transmutation device according to claim 1, wherein

said high pressurization device comprises an electrolysis device that carries out electrolysis of said electrolytic solution using said structure body as a cathode by supplying said electrolytic solution containing deuterium to said absorption part; and

- 5 said lower pressurization device comprises an exhaust device that evacuates said desorption part.

4. A nuclide transmutation device according to claim 1, wherein

said transmutation material binding device comprises a transmutation material lamination device that laminates said material that undergoes nuclide transmutation onto one surface of said structure body.

- 5 5. A nuclide transmutation device according to claim 1, wherein said transmutation material binding device provides a transmutation material supply device that supplies said material that undergoes nuclide transmutation to said absorption part, and exposes one surface of said structure body to a gas or liquid that includes said material that undergoes
- 5 the nuclide transmutation.

6. A nuclide transmutation device according to claim 1, wherein said structure body provides from one surface to the other surface in order:

a base material that is made of palladium or a palladium alloy, or a hydrogen absorbing metal other than palladium, or a hydrogen absorbing alloy other than a palladium alloy;

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a mixed layer that is formed on the surface of said base material and comprises palladium or a palladium alloy, or a hydrogen absorbing metal other than palladium or a hydrogen absorbing alloy other than a palladium alloy, and a material having a low work function (CaO in the embodiments); and

- 10 a surface layer that is formed on the surface of said mixed layer and comprises palladium or a palladium alloy, or a hydrogen absorbing metal other than palladium or a hydrogen absorbing alloy other than a palladium alloy.

7. A nuclide transmutation method comprising processing steps of the structure body comprising palladium or a palladium alloy, or a hydrogen absorbing metal other than palladium, or a hydrogen absorbing alloy other than a palladium alloy, the method comprises the steps of:

- 5 a high pressurizing process that brings about a state in which the pressure of the deuterium is relatively high on one surface side of said structure body;

a low pressurizing process that brings about a state in which the pressure of the deuterium is relatively low on the other surface side of said structure body; and

- a transmutation material binding process that binds the material that undergoes
10 nuclide transmutation to the one surface of said structure body.

8. A nuclide transmutation method according to claim 7, wherein said transmutation material binding process includes either a transmutation material lamination process that laminates said material that undergoes nuclide transmutation on the one surface of said structure body, or a transmutation material supply process that exposes the one surface of

said structure body to a gas or liquid that includes said material that undergoes nuclide transmutation.

9. A nuclide transmutation method according to claim 7, wherein said transmutation material binding process binds said material that undergoes nuclide transmutation to the one surface of said structure body.